Supreme Court, U. S.
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In The

Supreme Court of the United States

October Term, 1978

No. 77-554

GLOBE LININGS, INC., HOWARD D. WEBB and ARTHUR M. LOCKHART,

Petitioners,

v.

CITY OF CORVALLIS,

Respondent-Defendant and Third-Party Plaintiff-Appellee,

v.

S & T CONSTRUCTION COMPANY, INC.,

Respondent-Third-Party Defendant and Fourth-Party Plaintiff-Appellee,

v.

FIRESTONE TIRE AND RUBBER CO.,

Respondent-Fourth-Party Defendant-Appellee.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

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TOPICAL INDEX

	Page
OPINIONS BELOW	2
JURISDICTION	2
QUESTIONS PRESENTED	2
CONSTITUTIONAL AND STATUTORY PROVISIONS AND RULES INVOLVED	3
STATEMENT OF THE CASE	3
REASONS FOR GRANTING THE WRIT	9
A. Petitioners have been deprived of their property (the patent in suit) without due process of law in violation of the Fifth Amendment by the failure of the Ninth Circuit Court of Appeals to interpret 35 U.S.C. 103 in accordance with the directions set forth by this Court	9
B. The conduct of the Appellate Court calls for an exercise of this Court's power of supervision to prevent a grave miscarriage of justice not only in this case, but also in future patent cases	16
CONCLUSION	17
APPENDIX	
1. Opinion of the District Court	19
2. Opinion of the Ninth Circuit Court of Appeals	29
3. Order of the Appeals Court denying petitioners' Petition for Rehearing	35
4. Allen U.S. Patent No. 2,497,850	36
5. Feild U.S. Patent No. 2,461,537	37
6. Dial et al Patent No. 3,313,443	38

TABLE OF AUTHORITIES CITED

Cases

Page

Anderson's-Black Rock v. Pavement Salvage Co.,
396 U.S. 57 ..... 2, 10, 14

Blonder Tongue v. University Foundation,
1971, 402 U.S. 313 9

Cuno Engineering Corp. v. Automatic Devices Corp.,
314 U.S. 84 ..... 8, 13

Graham v. John Deere Co.,
383 U.S. 1 ..... 2, 4, 10, 11

Granris v. Ordean,
1914, 234 U.S. 385, 394 9

Iowa State University Research v. Sperry Rand Corp.,
(C.A. 4, 1971), 444 F.2d 406, 409 9

Kamei-Autokomfort et al v. Eurasian Automotive Products,
553 F.2d 603 16

Regimbal v. Scymansky,
444 F.2d 333 (1971) 8

Sakraida v. Ag Pro,
425 U.S. 273 ..... 2, 10, 14

CONSTITUTIONAL PROVISIONS, STATUTES AND RULES

U.S. Constitution, Fifth Amendment 2, 9

U.S. Constitution, Article 1, Section B, Clause 8 ..... 11, 17

28 U.S.C. §1254(1) 2

35 U.S.C. §103 ..... 2, 3, 6, 9, 10, 11, 13, 14, 16

35 U.S.C. §261 9

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CITY OF CORVALLIS,
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FIRESTONE TIRE AND RUBBER CO.,
Respondent-Fourth-Party Defendant-Appellee.

No.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

Petitioners pray that a Writ of Certiorari issue to review the Judgment of the United States Court of Appeals for the Ninth Circuit entered on June 14, 1977, affirming the Judgment of the United States District Court for the

District of Oregon and the Order denying petitioners' Petition for Rehearing entered August 4, 1977.

Opinions Below

The opinion of the District Court is reported unofficially at 185 United States Patents Quarterly 807 and appears at Appendix 1 herein. The opinion of the United States Court of Appeals for the Ninth Circuit is reported unofficially at 194 United States Patents Quarterly 415 and appears at Appendix 2 herein. The Order of the Appeals Court denying petitioners' Petition for Rehearing appears at Appendix 3 herein.

Jurisdiction

The Judgment of the Court of Appeals was entered on June 14, 1977, a timely decision for rehearing was denied August 4, 1977, and this Petition for a Writ of Certiorari was filed within 90 days of that date.

The jurisdiction of this court is invoked under 28 U.S.C. § 1254(1).

Questions Presented

1. Did the Court of Appeals deprive petitioners of their property (the patent in suit) without due process of law in violation of the Fifth Amendment by refusing to interpret Section 103 of Title 35 of the *United States Code* in accordance with this Court's direction set forth in *Graham v. Deere, Anderson's-Black Rock v. Pavement Salvage Co.* and *Sakraida v. Ag Pro.*

2. Did the conduct of the Court of Appeals call for an exercise of this court's power of supervision to prevent a grave miscarriage of justice, not only in this case but also in future patent cases.

Constitutional and Statutory Provisions and Rules Involved

This case involves the Due Process clause of the Fifth Amendment of the Constitution of the United States and Section 103 of Title 35 of the *United States Code.*

Statement of the Case

This is an action for infringement of Claim 5 of Dial et al United States Letters Patent No. 3,313,433, filed June 26, 1964, and issued April 15, 1967, for a "Floating Cover For A Liquid Storage" (Appendix 6). The invention was developed by plaintiff Globe Linings, Inc., a small business located in Long Beach, California. The invention consists of a floating cover for an open water reservoir to prevent contamination of the stored water by deleterious substances such as dirt, falling leaves, chemical substances in the air, bird and animal waste and refuse thrown in by vandals. Although smaller water reservoirs can be provided with fixed protective roofs, such a roof construction is too expensive for reservoirs of large surface area. The patented invention solved the vexing problem of removing rainwater from a flexible floating reservoir cover.

This action arose when the defendant City of Corvallis, Oregon, had an infringing cover constructed for its Baldy

Reservoir by defendant contractor S & T Construction Co., Inc. The latter defendant utilized materials and engineering provided by defendant Firestone Tire and Rubber Co.

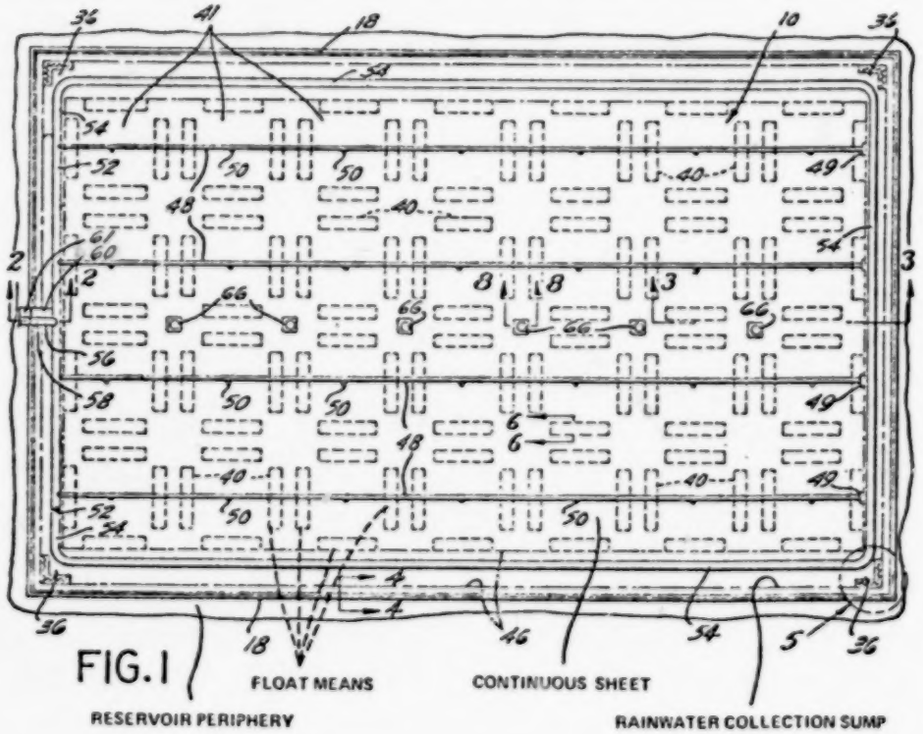
For the purpose of this Writ, it is important to note that the invention of the patent in suit had no trouble meeting the "secondary considerations" referred to in this Court's direction in *Graham v. John Deere Co.*, 383 U.S. 1, at 35-36. Undoubtedly, the most striking evidence in this regard was the failure of the U.S. Army and large manufacturers (including the defendant Firestone herein) to solve the problems inherent to a floating roof cover. Such failure was well documented by a confidential Army Report which detailed the unsuccessful attempts to solve such problems from 1943 to the subsequent abandonment of the project in approximately 1965. The Army Report summarized the failure of the whole project as follows:

> "There does not appear to be a simple method of handling water removal" (page 129); and *"patterns of rainwater accumulations on the surface of a reservoir cannot be predicted or controlled with any degree of certainty"* (page 132). (Emphasis added)

Further evidence of nonobviousness was the skeptical attitude those skilled in the reservoir art assumed towards petitioners' patented reservoir cover, the three-year period required to develop such cover and the commercial success achieved by the cover for the struggling plaintiff Globe Linings, Inc. Yet another indication of nonobviousness was provided by the recognition by defendant

City of Corvallis that the patented cover of Globe Linings, Inc. could solve the City's contamination problems, such recognition taking the form of an invitation to Globe Linings to bid on the City's reservoir cover. Unfortunately for Globe Linings, defendants Firestone and S & T Construction Company, Inc. made a lower bid. The lower bid reflected the fact that neither of such defendants needed to recoup the cost of developing and promoting the infringing cover, but instead could merely copy plaintiffs' patented cover.

There appears herebelow a copy of FIGS. 1 and 3 of the patent in suit with the basic elements of Claim 5 at issue thereof identified:



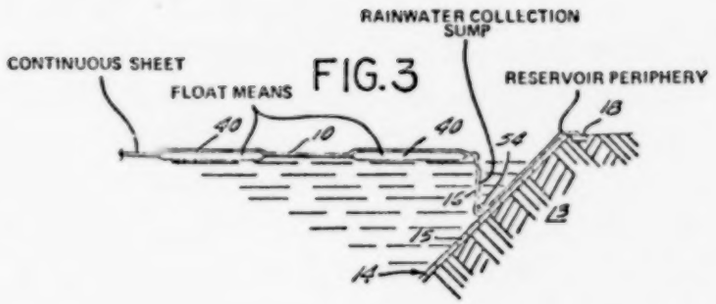


FIG. 3

Such basic elements of Claim 5 at issue are:

> (1) a continuous, flexible relatively thin sheet which completely overlies the stored liquid - this provides an inexpensive cover for large surface areas and one which is conformable to the reservoir configuration;
>
> (2) the side of the sheet being larger than the reservoir periphery - this provides excess material capable of forming depending folds; and
>
> (3) "float means" on the sheet and supporting the sheet such that (or "whereby") the unsupported sheet portion "forms a depending rainwater collection sump" outwardly of the supported sheet portion.

After the trial at Portland, Oregon, the trial court held Claim 5 of the patent in suit invalid and unenforceable for obviousness under 35 U.S.C. 103 based solely upon the three references set forth herebelow. The court did not rule on the issue of infringement:

> 1. The U.S. Army Report describing the abandoned experiments referred to hereinabove, such report being dated December, 1965.
>
> 2. Allen U.S. Patent No. 2,497,850, issued February 21, 1950, Appendix 4 (cited during the prosecution of the patent in suit).
>
> 3. Feild U.S. Patent No. 2,461,537, issued February 15, 1949, Appendix 5 (not cited).

In finding obviousness, the trial court particularly relied upon the Army Report, since such report was directed to the rainwater collection problem, while Allen merely discloses a rigid floating cover for a petroleum storage tank, and Feild merely discloses a floating cover for a closed tank. The trial court also ruled that applicants' claimed combination of old elements failed to "produce an unusual or surprising result".

On appeal, petitioners pointed out that since the patent in suit was filed June 26, 1964, and the Army Report was not published until December, 1965, such report could not possibly constitute prior art, and accordingly that it was error for the trial court to utilize the Army Report in holding the patent claim invalid for obviousness and in evaluating whether or not plaintiffs' invention produced unusual or surprising results over the prior art.

In its opinion (Appendix 2) the Court of Appeals agreed with petitioners that the Army Report could not be considered prior art. Rather than remand the case to the trial court, the Court of Appeals then proceeded to hold

the patent in suit invalid for obviousness on the basis of solely the Allen patent or the Feild patent! Specifically, the Court of Appeals held that:

> (1) since both Allen and Feild utilized covers having a peripheral sump wherein liquid could gather, the applicants' use of such a sump was not patentable "because a change in use is not a patentable quality unless it is patented as a process";
>
> (2) the use of the trough together with the inner floats which automatically diverted rainwater from the main body of the roof into the sump involved insufficient ingenuity and was "no more than that to be expected of a mechanic skilled in the art" citing *Cuno Engineering Corp. v. Automatic Devices Corp.*, 314 U.S. 84; and
>
> (3) the claimed invention consists only of a combination of ideas which produces results that would be "expected by one of ordinary skill in the art and hence the patent claim did not exceed the sum of its parts in "an unusual or surprising way" so as to meet the "rather severe test" for the patentability of a combination patent required by the Ninth Circuit Court of Appeals in *Regimbal v. Scymansky,* 444 F.2d 333 (1971).

The invalidity ruling of the patent in suit by the Ninth Circuit Appellate Court has destroyed a valuable property right of plaintiffs. In particular, plaintiffs' competitors can now sell copies of plaintiffs' floating roof cover at a lower

price than plaintiffs, since plaintiffs' competitors need not amortize the cost of developing and promoting their covers. With respect to a large competitor, such as defendant Firestone, plaintiffs do not have a country-wide marketing organization. Accordingly, plaintiffs cannot possibly meet Firestone's competition now that plaintiffs have been deprived of their legal monopoly afforded by the patent in suit.

Reasons for Granting the Writ

A. *Petitioners have been deprived of their property right (the patent in suit) without due process of law in violation of the Fifth Amendment by the failure of the Ninth Circuit Court of Appeals to interpret 35 U.S.C. 103 in accordance with the directions set forth by this Court.*

Patents have the attributes of personal property: 35 U.S.C. §261. The patent owner has a vested property right that can be cancelled, revoked or amended only by judicial proceedings that afford due process of law: *Iowa State University Research v. Sperry Rand Corp.,* (C.A. 4, 1971), 444 F.2d 406, 409.

The fundamental requisite of due process of law is the opportunity to be heard: *Grannis v. Ordean,* (1914), 234 U.S. 385, 394. Petitioners submit that due process requires not only that judicial proceedings be held, but that they provide the patent owner with a "fair opportunity procedurally, substantively and evidencially to pursue his claim": *Blonder Tongue v. University Foundation,* (1971),

402 U.S. 313. A holding of patent invalidity, in effect, destroys a patent owner's property. It amounts to a taking of his property. If the holding of invalidity is based upon substantive interpretations of the applicable patent statutes which so far depart from the standards set by this Court that they do not offer a patent owner such a "fair opportunity", petitioners submit that the property, the patent, is taken without due process of law. In this case, petitioners were deprived of a fair opportunity substantively to pursue their claim. The Ninth Circuit Court of Appeals, rather than interpreting 35 U.S.C. 103 in accordance with the direction set forth by this Court in *Graham v. Deere,* 383 U.S. 1; *Anderson's-Black Rock v. Pavement Salvage Co.,* 396 U.S. 57, and *Sakraida v. Ag Pro,* 425 U.S. 273, applied its own standards of obviousness in holding the patent in suit invalid. Additionally, the Appellate Court went off on a legal frolic of its own in holding the claimed combination invalid because *one* of the claim elements had been used for a different purpose in the prior art.

It is true that the Appellate Court, as usual, paid lip-service to *Graham v. Deere,* stating that the well-known mode of analysis set forth herebelow should be followed:

> "While the ultimate question of patent validity is one of law . . . the § 103 condition . . . lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined."

After approving the above language, the Appellate Court then ignored one of the most critical directions thereof, i.e., a determination of "the level of ordinary skill in the pertinent art". A review of the Court's opinion (Appendix 2) reveals that the Court did not make any attempt to evaluate the level of ordinary skill in the reservoir art.

The failure of the Appellate Court to determine the level of skill in the reservoir cover art made it quite impossible for the Appellate Court to intelligently apply the remaining factual criteria of *Graham v. Deere.* This is true since what may not have been obvious to one having a lower than ordinary level of skill might be obvious to one having a higher than ordinary level of skill.

In this case, it is clear that the Appellate Court did not bother to determine the level of skill in the art for the simple reason that such Court had no intention of applying the statutory test for patentability set forth in 35 U.S.C. 103. Instead, the Court applied a hindsight test based upon the Court's "gut" reaction that the cover construction of the patent in suit was so simple as to not be entitled to the legal monopoly promised by Article 1, Section 8, Clause 8 of the Constitution. Such hindsight approach was demonstrated by the Appellate Court's dissection of the Feild and Allen patents and rearranging the elements thereof to synthesize Claim 5 at issue.

In particular, the Appellate Court seized upon the peripheral flexible sump of Feild and Allen as being usable to collect and remove rainwater, even though the stated purpose thereof was to act as a vapor seal. Based upon this premise, the Appellate Court held that since such peripheral sump was in the prior art, its use to collect rainwater would not be patentable, holding:

> "[A] patent claiming a device that has already been put to use, albeit in a different manner, is invalid; in order to be valid over the prior art, it must claim not novel use, but novel conception."

Significantly, the Appellate Court did not base such above contention upon any statutory provision. It will be readily apparent that such holding completely ignored the fact that the peripheral rainwater collection sump of the patent is but *a single element* of Claim 5 at issue. If the logic of such holding is adopted in future Ninth Circuit decisions, Ninth Circuit Courts will feel free to invalidate any patent claim combination merely because *a single one* of the elements of such combination has been used for a different purpose in the prior art. By way of example, a patent claim which recited a combination of mechanical elements such as a motor, gearing, pump and valves could be held invalid merely because any one of such elements had been utilized for a different purpose in the prior art.

Not content with holding Claim 5 invalid because one of its elements was old, the Appellate Court also held that the use of the peripheral sump, together with inner floats which automatically diverted rainwater from the main

body of the roof into the sump involved ingenuity that was "no more than that to be expected of a mechanic skilled in the art", citing *Cuno Engineering Corp. v. Automatic Devices Corp.*, supra. The *Cuno* case applied the "seat-of-the-pants" subjective "flash of genius" standard of invention which prompted the provision in 35 U.S.C. 103 that "Patentability shall not be negatived by the manner in which the invention was made". That the Ninth Circuit Court of Appeals still applies the "gut reaction" invention standard of *Cuno* affords a clear indication that such Circuit refuses to apply the objective factual approach required by 35 U.S.C. 103.

Instead of applying its own subjective standard of patentability, the Appellate Court in this case should have looked at the clear evidence of non-obviousness provided by the Army Report. As indicated hereinabove, such report established the complete failure of those skilled in the reservoir art to solve the problems of rainwater collection in a flexible floating reservoir cover over several years despite intensive efforts to effect such solution. The Army Report established that a large number of skilled persons with adequate means and facilities unsuccessfully attempted over a long period of time to solve the rainwater collection problem solved by plaintiffs. It seems impossible to conclude other than that the invention was non-obvious. Yet this evidence was completely ignored by the Appellate Court.

The Appellate Court also refused to look at the "secondary considerations", indicating non-obviousness, "because a patentable invention is lacking". It will be clear

that if the Appellate Court had started its resolution of the 35 U.S.C. 103 test for obviousness by looking at the actual floating reservoir cover prior art and the "secondary considerations" of non-obviousness, the non-obviousness of the patent in suit would have become apparent.

The coup de grace of invalidity was delivered by the Appellate Court in concluding that the combination of elements of Claim 5 did not exceed "the sum of its parts in an unusual or surprising way". In so holding, the Appellate Court acted in direct conflict with the direction given by this Court in a case where a patent claim is directed to a combination of old elements. This Court does not require that the elements of such a combination should "exceed the sum of its parts in an unusual or surprising way". Instead, this Court has only required that such elements provide a synergistic result.

In *Anderson's-Black Rock,* this Court held:

> "A combination of elements may result in an effect greater than the sum of the several effects taken separately. No such synergistic result is argued here."

And, in *Sakraida v. Ag Pro,* this Court held:

> "When a device consists of a mere aggregation of segments of the prior art, there is an increased danger that a patent will withdraw into its monopoly what is already known and add nothing to the sum of useful knowledge. Thus, to be patentable, a

> combination of elements must produce something more than the sum of the pre-existing elements; there must be a synergistic result that is itself non-obvious."

The Ninth Circuit Court of Appeals does not apply this Court's synergistic result test, but applies its own more severe test for the validity of a combination patent, i.e., that the elements of the combination not only provide a synergistic effect, but also that such synergistic effect operates in an "unusual or surprising way". It is, of course, difficult to find many combinations of old elements which will even provide a synergistic effect, much less an unusual or surprising synergistic effect. Had the Appellate Court been satisfied to apply the synergistic effect requirement of this Court, Claim 5 of the patent in suit would have easily met such test. Thus, the construction and arrangement of the patent's floats to locate the excess cover material at the reservoir periphery results in such excess material automatically arranging itself into a rainwater collection sump for easy rainwater removal despite changes in the reservoir water level. The synergism results from the fact that the floats do not merely support the cover upon the water (as in the prior art) but additionally the floats serve the secondary function of cooperating with the cover to automatically define a level center section and a peripheral rainwater collection sump that collects rainwater from such center section. Likewise, the cover does not merely function as a cover (as in the prior art). Instead, because it is larger than the area of the reservoir, its excess material cooperates with the floats to define the aforementioned sump.

B. The conduct of the Appellate Court calls for an exercise of this Court's power of supervision to prevent a grave miscarriage of justice not only in this case, but also in future patent cases.

As pointed out in detail hereinbefore, the Appellate Court in this case refused to follow the directions of this Court in determining the validity of the patent in suit, namely, that 35 U.S.C. 103 be applied in determining non-obviousness, and that the synergistic result test be applied to a combination patent. The Ninth Circuit Court of Appeals now routinely follows its own erroneous path in testing a combination patent for obviousness. The most recent example of which petitioners are aware is *Kamei-Autokomfort et al v. Eurasian Automotive Products,* 553 F.2d 603. In *Kamei,* the Appellate Court, just as in this case, applied the "unusual or surprising result" non-obvious test rather than this Court's synergistic result test. *Kamei* is before this Court by means of a Petition For Writ Of Certiorari filed July 29, 1977 under No. 77-168.

It will be clear that unless this Court provides the Ninth Circuit Court of Appeals with supervision, it can only be assumed that such Appellate Court will continue to apply its own standards of patentability in future patent cases. Such erroneous application of 35 U.S.C. 103 will naturally enough be adopted by the trial courts. As a result, the patent system will be effectively emasculated in the Ninth Circuit so as to render such patent system incapable of performing its Constitutional purpose: "To promote the progress of . . . useful arts, by securing for limited times to . . . inventors the exclusive right to their . . . dis-

coveries", as guaranteed by Article 1, Section 8, Clause 8 of the Constitution." Once potential patentees become aware of such emasculation, the wells of invention will quickly dry up. Moreover, small businesses (such as plaintiff Globe Linings in this case) can no longer effectively compete with large businesses (such as defendant Firestone herein). Additionally, and more importantly, the public will no longer receive the benefits of research and development generated by the present patent system.

Conclusion

For the reasons set forth hereinabove, this Petition for Certiorari should be granted.

Respectfully submitted,

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APPENDIX

APPENDIX 1

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON

GLOBE LININGS, INC and
HOWARD D. WEBB,

Plaintiffs,

v.

CITY OF CORVALLIS,

Defendant and Third-Party Plaintiff,

v.

S & T CONSTRUCTION COMPANY, INC.,

Third-Party Defendant and Fourth-Party Plaintiff,

v.

FIRESTONE TIRE AND RUBBER CO.,

Fourth-Party Defendant.

Civil No. 72-290

OPINION

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Burns, J.:

This is an action for alleged infringment of Claim 5 of United States Letters Patent No. 3,313,443, issued April 11, 1967, for "FLOATING COVER FOR A LIQUID STORAGE RESERVOIR." The alleged infringement arises by virtue of the construction by or on behalf of the City of Corvallis, and the use of, a floating roof cover for the City's Baldy Reservoir. A third-party complaint against the construction contractor, a counter-claim by third-party defendant alleging invalidity of the patent, and a fourth-party complaint against the materials supplier have also

been filed. The issues of patent validity and infringement have been segregated for separate trial; all other issues among the parties are reserved for later determination.

Jurisdiction is properly invoked under 28 U.S.C. §1338, and venue lies in this district under 28 U.S.C. §1400(b).

Claim 5 of the patent is as follows:

> "5. Apparatus for preventing contamination of the stored liquid in an open reservoir, comprising: A continuous sheet of flexible, relatively thin material impervious to and completely overlying said liquid in coextensive relationship to the periphery of said reservoir, the size of said sheet being greater than the area encompassed by the upper periphery of said reservoir;
>
> anchor means securing the outer periphery of said sheet to the upper periphery of said reservoir in fluid-tight relationship therewith;
>
> and float means on said sheet spaced inwardly from the upper periphery of said reservoir to raise and lower said sheet on the surface of said liquid as the level thereof varies, with said float means supporting the area of said sheet engaged by said float means at a higher elevation than the portion of said sheet spaced outwardly of said float means and inwardly of said anchor means whereby said portion forms a depending rainwater collection sump."

Because it would have been obvious to a person having ordinary skill in the art, 35 U.S.C. §103, the patent is invalid and unenforceable. So concluding, I do not consider the question of infringement.[1]

Plaintiff is, of course, entitled to the statutory presumption of validity, 35 U.S.C. §282, that attaches to the grant of the patent here in issue. My finding of obviousness, however, is based on three prior art references, two of which were not considered by the Patent Office. "Where the element of patentability being considered is the obviousness of the subject matter when weighed against the prior art, the presumption dissipates in the face of a showing that the prior art was not brought to the attention of the examiners." *Hewlett-Packard Co. v. Tel-Design, Inc.*, 460 F.2d 625 (9th Cir. 1972). The file wrapper indicates that the patent to Feild, No. 2,461,537, and the Hasty Bulk Fuel Storage Reservoir Report of the U.S. Army Engineer Research and Development Laboratories ("the Army report") were not canvassed by the examiners.

Discussion of obviousness must begin with the standard set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Under §103, the scope and content of the prior

1. *Jeddeloh Brothers v. Coe Mfg.*, 375 F.2d 85 (9th Cir. 1967), *cert. denied* 389 U.S. 823 (1967), and *Volvo, Inc. v. Cummings, & Sander, Inc.*, 435 F.2d 981 (9th Cir. 1971), indicate that I need not determine the issue of infringement, having concluded that the patent is invalid.

art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined.

The patent to Allen, No. 2,497,850, teaches the use of a partially flexible, floating cover with an amount of flexible material that is larger than the surface to be covered by it, in order to follow the rise and fall of the fluid level. Allen also teaches use of an anchor means to attach the flexible material to the periphery of the tank. Finally, Allen teaches that a peripheral anchor with flexible material connected to a float over the liquid will create a peripheral trough.

The patent to Feild, No. 2,461,537, also combines the elements of a peripheral anchor for flexible material and a float means. Specifically, the patent teaches use of a flexible material of sufficiently large size so that, when attached at its outer periphery to the side wall, a dependent loop will be formed in the material. Unlike Allen, which used a large solid float to cover most of the surface and flexible material as a link to the wall, Feild uses flexible material over most of the surface with only a small central float. One embodiment, Fig III, teaches the use of an annular float, for this round tank, near the periphery, thus confining the liquid on the upper/outer side of the flexible material to a peripheral trough.

The Army report offers extensive pertinent teaching. First, a flexible material was used to cover a large rectangular reservoir. The material was larger than the surface, to allow for rise and fall of the liquid, and was anchored by a means that involved wrapping the material around a peripheral pipe and securing the pipe to the ground with sandbag weights. Second, a float tube ran the length of the reservoir at the center of the cover. Third, ballast tubes were placed adjacent the periphery in order to form rainwater accumulation troughs.

We turn now to the differences between these teachings and the claim of plaintiff's patent. Claim 5 refers to a continuous sheet of flexible material over the liquid, with an area greater than that of the reservoir. All three of the references discussed above show a continuous sheet of material with an excess at the periphery. Allen does use a solid central portion, but Feild and the Army report show flexible material forming all or substantially all of the cover. Whether the reservoir is round, square or rectangular, has vertical or sloping walls, covers volatile petroleum products or water, is not determinative; claim 5 is not limited in these respects.

Claim 5 does specify a cover for an open reservoir, and only the Army report explicitly reveals an open reservoir. Allen does not specify whether the tank is covered; Feild indicates a rainshed. With respect to the critical elements of Claim 5, the fact that Feild and Allen have, or may have, fixed roofs is immaterial.

Both Allen and Feild disclose an anchor means securing the outer edge of the sheet to the reservoir periphery in fluid-tight relation. The connection in these patents is not at the top of the tank, but in both cases it appears that the operation of the flexible cover would not be affected by shifting the connection point upward. When either the Allen or Feild tank is less than half full, it may be noted, the connection point is then in effect at the top of a shorter tank and the flexible cover forms a trough in the same way, and in the same relationship to the fluid level, as the contested patent. The Army report shows an anchor means different in detail from plaintiff's specification, but fully described by Claim 5.

Claim 5 last describes float means on the cover, spaced inwardly from the reservoir sides to raise and lower the cover and — by keeping the center portion of the cover higher than the outer portion — to form a depending rainwater collection sump around the edge. Feild and Allen both include a float means arranged with the flexible material to form a trough around the edge, and Feild in the embodiment in Figure III used floats near the periphery as well as at the center, in a way very similar to that described in plaintiff's patent. The Army also used a central float, together with peripheral weights to place the trough, which differs from the disputed patent's specification in that the float is a single tube down the center rather than a network of floats. Claim 5, however, makes no reference to the size of the float means; in addition, the Feild float means is functionally very similar to plaintiff's.

Allen does not mention use of the trough to collect rainwater, and Feild, of course, would not because it is to be covered, but the Army report discusses rainwater extensively. Because structure rather than use is the patentable quality, *Exer-Genie v. McDonald*, 453 F.2d 132 (9th Cir. 1971), it is not determinative that the fluid-filled dependent trough in Allen and Feild was *used* as a sealing mechanism: its structure was very similar to plaintiff's even though the latter was *used* for collecting rather than retaining fluid.

John Deere, supra, directs finally that I examine the level of ordinary skill in the pertinent art. Having reviewed carefully the testimony of the expert and other witnesses, I find that an ordinarily skilled designer or maker of reservoir covers would have been aware of and understood the use of flexible materials larger in size than the reservoir to be covered, the use of float means to raise and lower the cover, the use of anchor means at the periphery, and the use of peripheral floats to control the positioning of the cover material.

From this, I conclude that, taken as a whole, the subject matter of the disputed patent would have been obvious at the time the invention was made to a person having ordinary skill in the art.

Plaintiff has suggested that, even if the elements of his claim are individually old and obvious, the results are synergistic and the invention, therefore, nonobvious. In this area of combination patents we are instructed to be strict. *Jeddeloh Brothers v. Coe Mfg.*, 375 F.2d 85 (9th Cir. 1967), cert, denied 389 U.S. 823 (1967); *Burgess v. Klingensmith*, 487 F.2d 321 (9th Cir. 1973). And in the Ninth Circuit, the combination of old elements must produce an unusual or surprising result. *Hewlett-Packard*, supra, *Regimbal v. Scymansky*, 444 F.2d 333 (9th Cir. 1971). No such result was achieved here; that is, no result unusual or surprising in light of the prior art. Plaintiff's cover floated up and down with the fluid level, but so did all the three discussed. Plaintiff's excess material gathered in folds, but so did the Army's. Plaintiff's folds were located at the periphery, but so were Allen's and Feild's. Plaintiff's peripheral folds gathered rainwater, but so did the Army's. The shuffling of old elements here produced only the results that prior experience with the elements had suggested. That plaintiff's shuffle was a better one may be true, but that is not the test of patentability.

Although some evidence was introduced concerning "such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc.," *John Deere*, supra, I find that evidence not persuasive, particularly in light of the small differences between prior art and the challenged patent. In this evidence, I do not find the clarity of unsolved problems plus failure of others that was a "weighty indication that at the *then* level of skill . . ., the

patented discovery was not obvious." *Cool-Fin Electronics v. International Electronic Research Corporation*, 491 F.2d 660, 663 (9th Cir. 1794).

The foregoing shall constitute findings of fact and conclusions of law pursuant to F.R. Civil P. 52.

Dated this 10th day of April, 1975.

JAMES M. BURNS

APPENDIX 2

GLOBE LININGS, INC., Howard D. Webb and Arthur M. Lockhart, Plaintiffs-Appellants,

v.

CITY OF CORVALLIS, Defendant and Third-Party Plaintiff-Appellee,

v.

S & T CONSTRUCTION COMPANY, INC., Third-Party Defendant and Fourth-Party Plaintiff-Appellee,

v.

FIRESTONE TIRE AND RUBBER CO., Fourth-Party Defendant-Appellee.

No. 75-2848.

United States Court of Appeals, Ninth Circuit.

June 14, 1977.

Owner of patent brought action for infringement. The United States District Court for the District of Oregon, James M. Burns, J., entered judgment holding patent invalid and the patent holder appealed. The Court of Appeals, Eugene A. Wright, Circuit Judge, held that (1) failure of examiner to consider pertinent prior art dissipated statutory presumption of validity, and (2) claim 5 of patent No. 3,313,443 relating to a floating cover for liquid storage reservoirs was invalid because of obviousness.

Affirmed.

1. Patents ⇐32

Presumption of nonobviousness of patent dissipates upon showing that prior art was not brought to attention of patent examiner. 35 U.S.C.A. § 282.

2. Patents ⇐32

Even one prior art reference not considered by patent office may be sufficient to overcome presumption of nonobviousness of patent. 35 U.S.C.A. § 282.

3. Patents ⇐68

Army report discussing an experimental effort could not be considered as prior art since it was not public information. 35 U.S.C.A. § 102(a).

4. Patents ⇐68

Where army report on experimental effort stated that each transmittal of the document outside the agencies of United States government must have prior approval of commanding general and that recipient should destroy report when no longer needed, it could not be said that the report fell within the realm of "public information" for purpose of determining whether it constituted prior art. 35 U.S.C.A. § 102(a).

See publication Words and Phrases for other judicial constructions and definitions.

5. Patents ⇐58

If patent not considered by examiner was either less pertinent than the prior art he did consider or was merely cumulative, presumption of validity of patent issue would operate. 35 U.S.C.A. §§ 102, 282.

6. Patents ⇐58

Since it was determined in patent infringement action that a particular patent which was not considered by examiner was more pertinent than the patent he did consider on issue of prior art, failure of patent examiner to consider the more pertinent patent dissipated statutory presumption of validity of issued patent and court started with a clean slate in considering question of obviousness in infringement action. 35 U.S.C.A. § 282.

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7. Patents ⇐18

In considering question of obviousness, court must inquire whether or not claim of patent would have been obvious to person of ordinary skill in the art which requires determination of scope and content of prior art, differences between prior art and claim in issue, and level of ordinary skill in pertinent art.

8. Patents ⇐18

Inventor will not be denied patent simply because his invention embodies a solution which seems simple and obvious with benefit of hindsight; solution must constitute a change in structure and not a change in use.

9. Patents ⇐27(1)

Change in use is not patentable quality unless patented as a process.

10. Patents ⇐328(2)

Claim 5 of patent No. 3,313,443, relating to a floating cover for liquid storage reservoirs was invalid because of obviousness in view of prior art. 35 U.S. C.A. § 103.

11. Patents ⇐16.7, 36.2(1)

Where patentable invention is lacking, secondary consideration such as commercial success and long-felt but unfulfilled need cannot fill gap.

Appeal from the United States District Court for the District of Oregon.

Before LUMBARD,* WRIGHT and ANDERSON, Circuit Judges.

OPINION

EUGENE A. WRIGHT, Circuit Judge:

Globe Linings, Inc. (Globe) is the owner of U.S. Patent No. 3,313,443 (the Dial patent), which has as its subject matter a floating cover for liquid storage reservoirs. This flexible cover protects stored liquid from falling debris and sunlight. It is also adapted, through the use of floats, to rise and fall with the level of the liquid. Because the cover is larger than the reservoir, folds form adjacent to the periphery. Rainwater is collected in the peripheral folds and removed by pump.

Under contract with the City of Corvallis (Corvallis), the S & T Construction Co. constructed a floating reservoir cover for the city's Baldy Reservoir. Globe brought suit for infringement of claim 5[1] of its patent. Corvallis and other defendants[2] contended that Globe's patent was invalid for obviousness under 35 U.S.C. § 103 (1970).[3] The district court segregated the issues of patent validity and infringement for trial, found the patent invalid for obviousness, and gave judgment for defendants.

On appeal Globe contends that the district court's finding of obviousness is incorrect. It argues that the statutory presumption of the patent's validity should not have been rejected. It also contends that, even if its invention contained no new elements, the combination of old elements produced an unusual or surprising result not found in the prior art.

* Senior Circuit Judge for the Second Circuit.

1. Claim 5 of the patent defines this portion of the invention as follows:

> "Apparatus for preventing contamination of the stored liquid in an open reservoir, comprising:
>
> a continuous sheet of flexible, relatively thin material impervious to and completely overlying said liquid in coextensive relationship to the periphery of said reservoir the size of said sheet being greater than the area encompassed by the upper periphery of said reservoir;
>
> anchor means securing the outer periphery of said sheet to the upper periphery of said reservoir in fluid-tight relationship therewith;
>
> and float means on said sheet spaced inwardly from the upper periphery of said reservoir to raise and lower said sheet on the surface of said liquid as the level thereof varies, with said float means supporting the area of said sheet engaged by said float means at a higher elevation than the portion of said sheet spaced outwardly of said float means and inwardly of said anchor means whereby said portion forms a depending rainwater collection sump."

2. Impleaded as defendants were S & T Construction Company and Firestone Tire and Rubber Company, which supplied materials to S & T. Because all three defendants claimed that the patent was invalid for obviousness we will consider their claims together for purposes of this appeal.

3. Recognized at least as early as 1851 in *Hotchkiss v. Greenwood*, 11 How. 248, 52 U.S. 248, 13 L.Ed. 683 (1851), the nonobviousness requirement was codified in 1952 as Section 103 of the Patent Act:

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

4. In its brief Globe contends that the cover terminated inwardly of the periphery but the district court found otherwise. Because we find substantial evidence to support the court's finding we treat it as a finding of fact which is not clearly erroneous and adopt it. Fed.R.Civ. Pro. 52(a).

I.

THE STATUTORY PRESUMPTION

The district court relied on three prior art references, two of which were not considered by the patent office. This raises an initial question of whether appellant was entitled to the statutory presumption of validity. Congress has declared that:

> A patent shall be presumed valid. . . . The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.

35 U.S.C. § 282 (Supp.1977).

[1, 2] We have held that this "presumption of non-obviousness dissipates upon a showing that the prior art was not brought to the attention of the patent examiner." *Alcor Aviation, Inc. v. Radair Incorporated*, 527 F.2d 113, 115 (9th Cir. 1975); *see also Hewlett-Packard Co. v. Tel-Design, Inc.*, 460 F.2d 625 (9th Cir. 1972). Even one prior art reference not considered by the patent office may be sufficient to overcome the presumption. *Jaybee Mfg. Corp. v. Ajax Hardware Corp.*, 287 F.2d 228, 229 (9th Cir. 1961).

The Allen patent was among the 10 patents cited as references by the examiner. Its elements included a partially flexible, flat cover with an amount of flexible material larger than the covered surface level to follow the rise and fall of the fluid level.[4] An anchor attached the flexible material to the periphery of the tank in a fluid-tight relationship. The patent also demonstrated that a peripheral anchor with flexible material connected to a float over the liquid will create a peripheral trough.

Two possible prior art references not considered by the examiner were a patent issued to an inventor, Feild, and an Army report discussing an experimental effort, begun in 1943 and terminated around 1965, to devise a system for rapidly building reservoirs with covers.

[3] As to the Army report, we agree with Globe that it cannot be considered as prior art because it was not public information as required by 35 U.S. § 102(a) (1970).[5] Although section 102(a) merely defines prior art as an "invention . . . known or used by others," this provision has been held to mean "only what was known or used publicly or was accessible to the public." *Union Carbide Corp. v. Filtrol Corp.*, 170 USPQ 482, 518 (C.D.Cal.1971), *aff'd* in an unpub. memo. 179 UPSQ 209 (9th Cir. 1973).[6] *See also Carboline Co. v. Mobil Oil Corp.*, 301 F.Supp. 141 (N.D.Ill.1969) (work product under a "security" classification).

[4] Although the district court was not called upon to decide whether the Army report was public information we note that the document itself contained this language: [7]

> Each transmittal of this document outside the agencies of the U.S. Government must have prior approval of the Commanding General, U.S. Army Material Command, Washington, D.C. 20315.
>
> . . . . . .
>
> Destroy this report when no longer needed.

Another section of the report listed the agencies to which the report has been distributed. After our examination of the record, we cannot say that this report falls within the realm of "public information."

[5] Because of our holding that the Army report could not be considered as prior art, we must decide whether the Feild patent itself was sufficient to negate the presumption of non-obviousness. The first question is whether the Feild patent was either "less pertinent" than the prior art considered by the examiner, or was merely "cumulative." In either case, the presumption of validity would then be allowed to operate. *Saf-Gard Products, Inc. v. Service Parts, Inc.*, 532 F.2d 1266, 1271 (9th Cir.), *cert. denied*, 429 U.S. 896, 97 S.Ct. 258, 50 L.Ed.2d 179 (1976).

Globe contends that the Feild patent is less pertinent than the Allen patent because its design contemplates covering the reservoir with a rigid roof, thereby precluding the floating cover beneath from being used to collect rain, unlike the Allen and Dial patents, both of which are open to the rain. It notes that its expert, a patent attorney, testified that the cited Allen patent was more pertinent than the non-cited Feild patent. The court, however, not the expert, determines which is more pertinent.

[6] In certain respects, the record reveals that the Feild patent was more pertinent than the Allen patent. Specifically we note that (1) unlike the Allen patent but like the instant one the cover of the Feild patent consisted almost entirely of a flexible material, and (2) again unlike the Allen patent but like the instant one the float means in the Feild patent consisted of floats near the periphery of the cover as well as in the center, thus confining the liquid on the upper/outer side of the flexible material to a peripheral trough. These features were critical to both the Dial and Feild patents. We therefore find the Feild patent to be pertinent prior art and the failure of the patent examiner to consider it dissipates the statutory presumption of validity.

With a clean slate, we consider the question of obviousness.

II.

OBVIOUSNESS

[7] In approaching this question, we must inquire whether or not claim 5 of the Dial patent would have been obvious to a person of ordinary skill in the art. This is the determinative test of patentability under section 103. *Saf-Gard Products, Inc., supra* at 1270. We have been directed by the Supreme Court in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 694, 15 L.Ed.2d 545 (1966), to adopt the following mode of analysis:

> While the ultimate question of patent validity is one of law . . . the § 103 condition . . . lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined.

"Prior art" then plays a fundamental role in our examination of this case. *See* Chisum, "Sources of Prior Art in Patent Law," 52 *Wash.L.Rev.* 1, 3 (1976).

[8, 9] An inventor will not be denied a patent simply because his invention embodies a solution which seems simple and obvious with the benefit of hindsight. *National Sponge Cushion Co. v. Rubber Corp.*, 286 F.2d 731, 735 (9th Cir. 1961), *cert. denied*, 368 U.S. 976, 82 S.Ct. 480, 7 L.Ed.2d 438 (1962). The solution must constitute a change in structure, however, not a change in use because a change in use is not a patentable quality unless it is patented as a process.[8]

> [A] patent claiming a device that has already been put to use, albeit in a different manner, is invalid; in order to be valid over the prior art, it must claim not novel use, but novel conception.

Beckman Instruments, Inc. v. Chemtronics, Inc., 428 F.2d 55, 561 (5th Cir.), *cert. denied*, 400 U.S. 956, 91 S.Ct. 353, 27 L.Ed.2d 264 (1970), *quoted in Exer-Genie, Inc. v. McDonald*, 453 F.2d 132, 134 (9th Cir. 1971), *cert. denied*, 405 U.S. 1075, 92 S.Ct. 1498, 31 L.Ed.2d 809 (1972).

---

5. Section 102:

> "A person shall be entitled to a patent unless—
> "(a) the invention was known or used by others in this country . . . before the invention thereof by the applicant for [the] patent . . ."

6. We note that on pages 3–4 of its reply brief appellant represents that this case appears in Federal Supplement and Federal Reporter 2nd Series. We find no such cases at the citations given. Rather, we have found such dispositions in U. S. Patent Quarterly. We note that the Court of Appeals' ruling is an unpublished memorandum decision of August 31, 1973. We refer counsel to Ninth Circuit Rule 21(c) which states that a "disposition which is not for publication . . . shall not be cited to this Court in briefs or oral argument." This rule means what it says even when applied to patent cases.

7. Plaintiff's Exhibit 43, "Development of a Hasty Bulk Fuel Storage Reservoir," U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Virginia, (Dec.1965) (first unnumbered page after the title page).

8. See footnote 1 in *Exer-Genie, Inc. v. McDonald*, 453 F.2d 132, 133 (9th Cir. 1971), *cert. denied*, 405 U.S. 1075, 92 S.Ct. 1498, 31 L.Ed.2d 809 (1972).

[10] Both the Feild and Allen patents include a float means arranged with a flexible material to form a trough around the edge and the Feild patent uses floats near the periphery in a way very similar to that described in the Dial patent. The major elements of claim 5 of the Dial patent were (1) the continuous sheet of material extending beyond the area of stored liquid, (2) the use of a float means to support the cover and form a fold outwardly from the float means, and (3) the use of a perimeter sump to collect and remove rainwater. The collection of rainwater in the peripheral sump was accomplished by the raising of the inner floats, thus causing the rainwater to flow downward to the deep peripheral fold or trough.

Because the main significant elements of the Dial patent claim 5 were already found in the prior art, the final inquiry is whether the raising of the height of the inside floats and the use of a pump to drain the water from the trough were obvious. We conclude that they were.

There was testimony by appellant's expert [9] that the Allen patent arrangement would collect rainwater, whether or not that was its stated purpose. The *use* of the trough to collect water was therefore a change in use, not structure. The raising of the inner floats to create a run-off was arguably a change in structure, but the ingenuity required to effect the adaptation was "no more than that to be expected of a mechanic skilled in the art." *Cuno Engineering Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 92, 62 S.Ct. 37, 41, 86 L.Ed. 58 (1941).

[11] Because a patentable invention is lacking, secondary considerations such as "commercial success" and "long-felt but unfulfilled needs" cannot fill the gap. *Graham v. John Deere Co.*, 383 U.S. 1, 35–36, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 153, 71 S.Ct. 127, 95 L.Ed. 162 (1950).

III.

COMBINATION PATENT

Appellant suggests that the float arrangement of the Dial patent to locate the excess material at the periphery of the reservoir was an unusual or surprising result not found in the prior art. It also makes reference to the ability of the float means to keep the cover from sinking if punctured, and to the raising of the inner floats. In so doing, appellant attempts to persuade this court that its invention satisfies the "rather severe test" for patentability of a combination patent. *See Regimbal v. Scymansky*, 444 F.2d 333, 338–39 (9th Cir. 1971). We must therefore decide whether the "whole" of this patent claim exceeds the sum of its parts in an unusual or surprising way.

We hold that it does not, but rather consists only of a combination of ideas which produces results that would be "expected by one of ordinary skill in the art." *Hewlett-Packard Co. v. Tel-Design, Inc.*, 460 F.2d at 629–30.

The judgment of the district court is affirmed.

9. Reporter's Transcript at 303.

APPENDIX 3

IN THE UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

GLOBE LININGS, INC., HOWARD D. WEBB and ARTHUR M. LOCKHART,
Plaintiffs-Appellants,

v.

CITY OF CORVALIS,
Defendant and Third-Party Plaintiff-Appellee,

v.

S & T CONSTRUCTION COMPANY, INC.,
Third-Party Defendant and Fourth-Party Plaintiff-Appellee,

v.

FIRESTONE TIRE AND RUBBER CO.,
Fourth-Party Defendant-Appellee.

No. 75-2848

Before: LUMBARD, WRIGHT and ANDERSON, Circuit Judges.

The panel as constituted in the above case has voted to deny the petition for rehearing. Judges Wright and Anderson have voted to reject the suggestion for a rehearing en banc.

The full court has been advised of the suggestion for an en banc hearing, and no judge of the court has requested a vote on it. Fed.R.App.P. 35 (b).

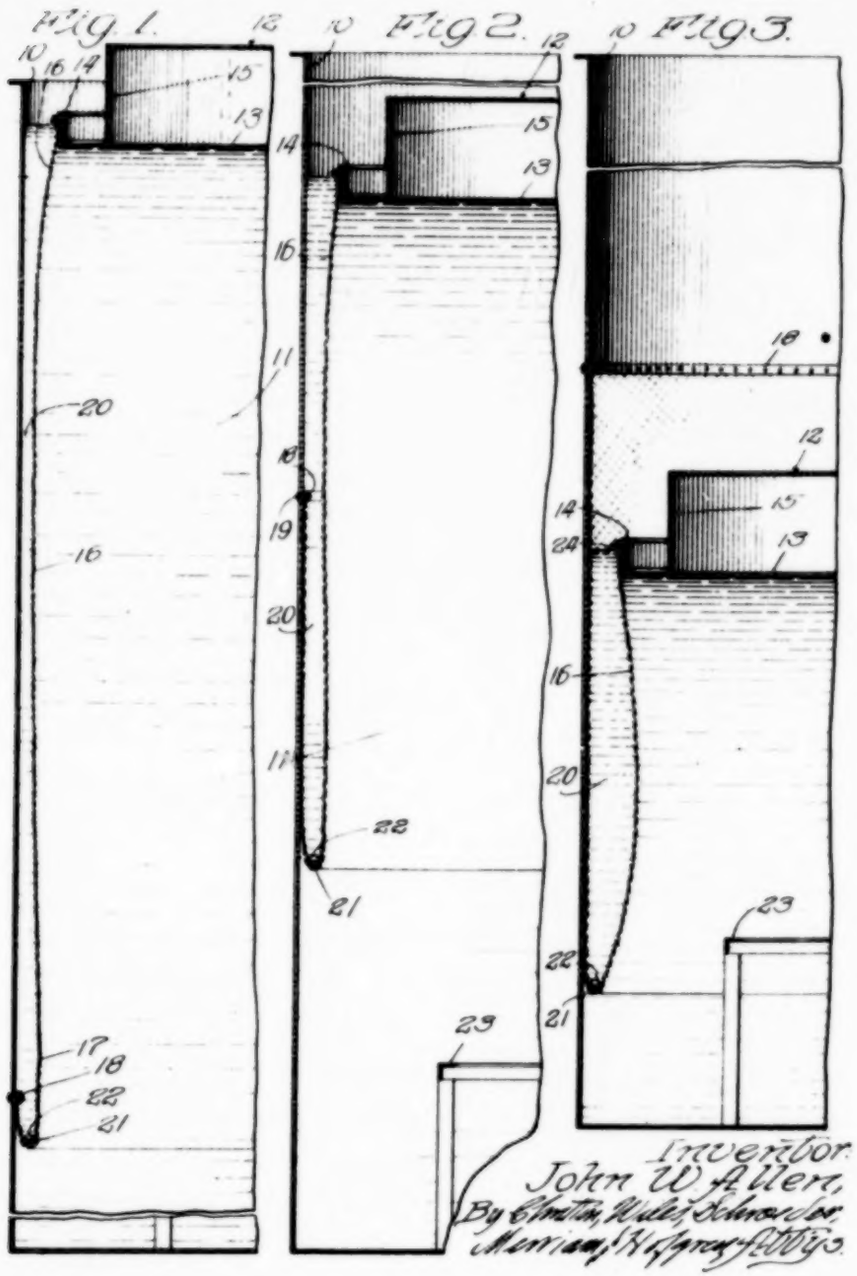
The petition for rehearing is denied and the suggestion for a rehearing en banc is rejected.

APPENDIX 4

Feb. 21, 1950 J. W. ALLEN 2,497,850

SEAL FOR FLOATING ROOF TANKS

Filed Aug. 6, 1945 2 Sheets-Sheet 1



Inventor:
John W. Allen,
By Clinton, Wolfe, Schroeder,
Morrison & Hyman Attorneys.

APPENDIX 5

Feb. 15, 1949. A. S. FEILD 2,461,537

FLOATING ROOF STORAGE TANK

Filed Oct. 10, 1944 2 Sheets-Sheet 1

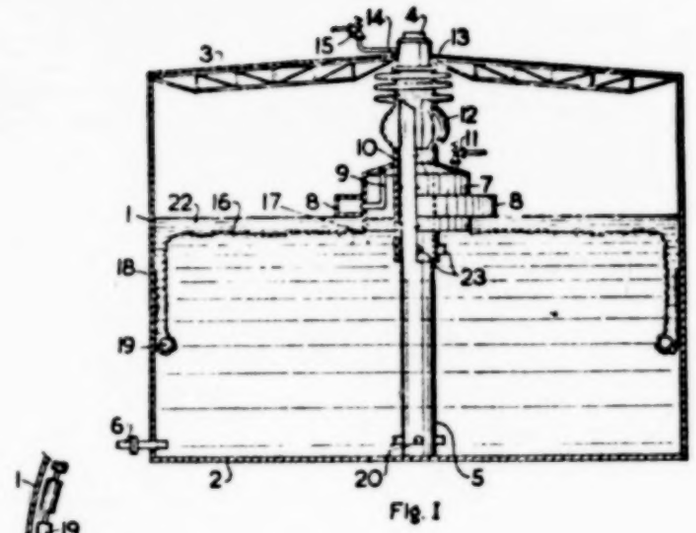


Fig. I

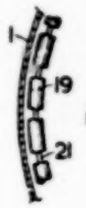


Fig. II

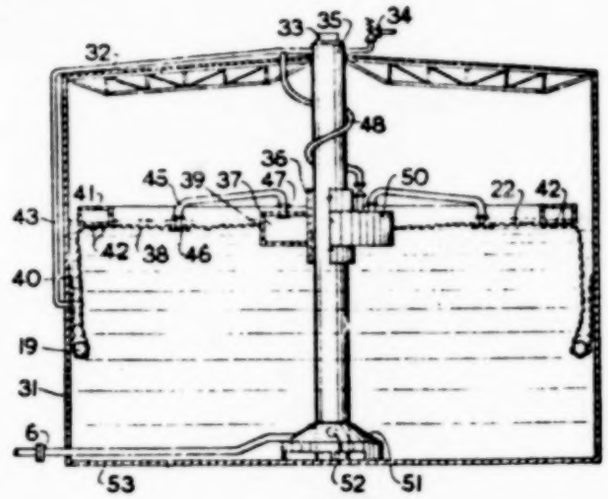


Fig. III

Inventor: Alexander S. Feild

By his Attorney: _____

APPENDIX 6

April 11, 1967 H. S. DIAL ETAL 3,313,443

FLOATING COVER FOR A LIQUID STORAGE RESERVOIR

Filed June 26, 1964 3 Sheets-Sheet 1

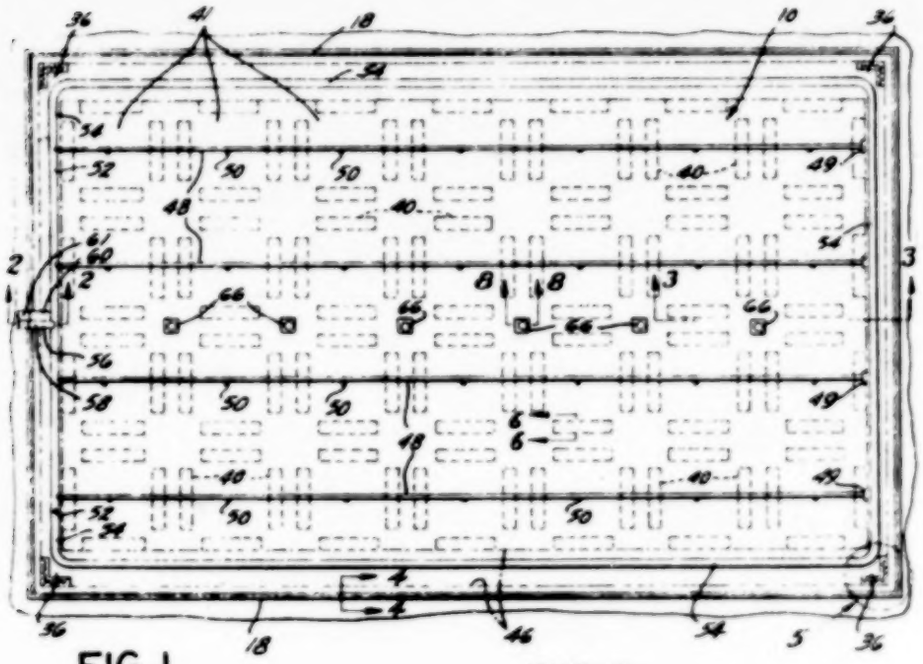


FIG. 1

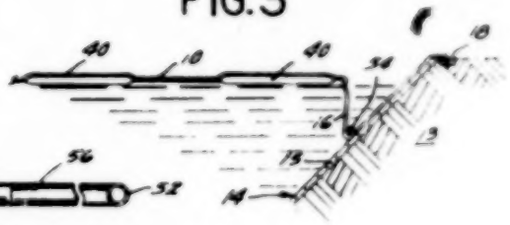


FIG. 3

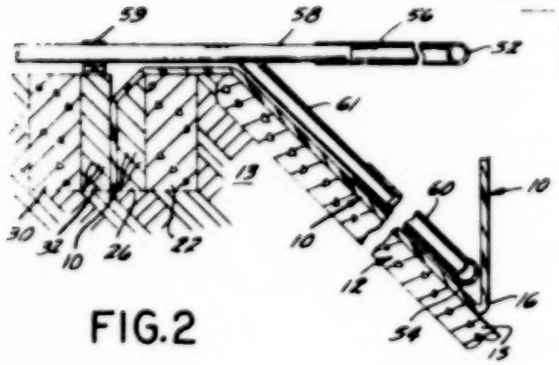


FIG. 2

INVENTORS.
HOWARD S. DIAL
HENRY L. HABEGGER
WILLIAM B. KAYS
BY Zulauf, Patton, Rabe, Lee and Uhlacht
ATTORNEYS

April 11, 1967 H. S. DIAL ETAL 3,313,443

FLOATING COVER FOR A LIQUID STORAGE RESERVOIR

Filed June 26, 1964 3 Sheets-Sheet 2

FIG. 4

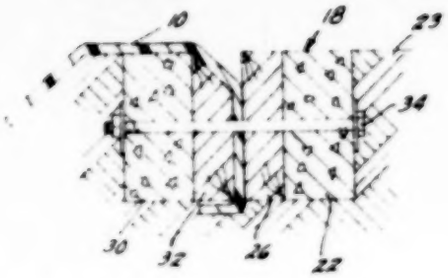


FIG. 5

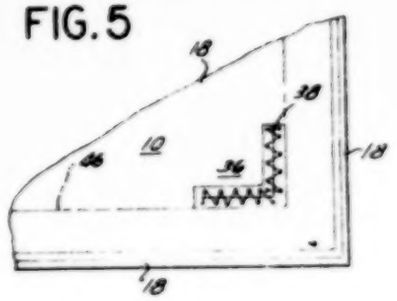
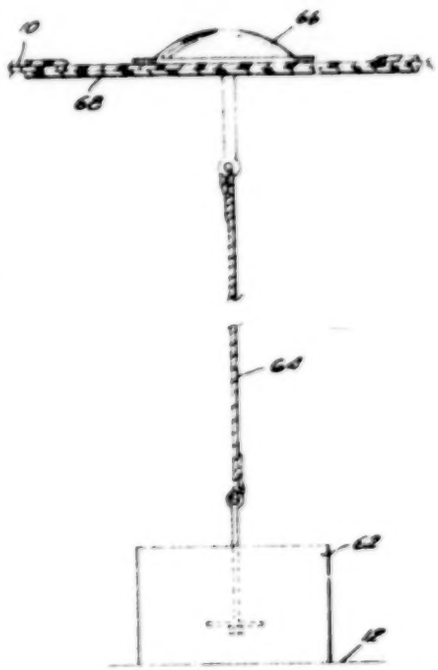


FIG. 6

FIG. 8



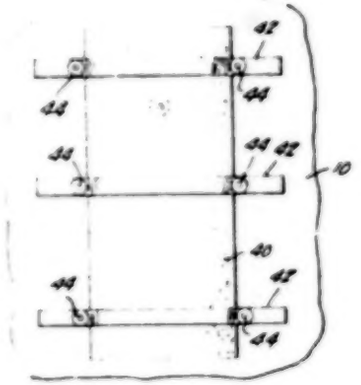


FIG. 7

INVENTORS.
HOWARD S. DIAL
HENRY L. HABEGGER
WILLIAM B. KAYS
BY Zulauf, Patton, Rabe, Lee and Uhlacht
ATTORNEYS

April 11, 1967 H. S. DIAL ETAL 3,313,443

FLOATING COVER FOR A LIQUID STORAGE RESERVOIR

Filed June 26, 1964 3 Sheets-Sheet 3

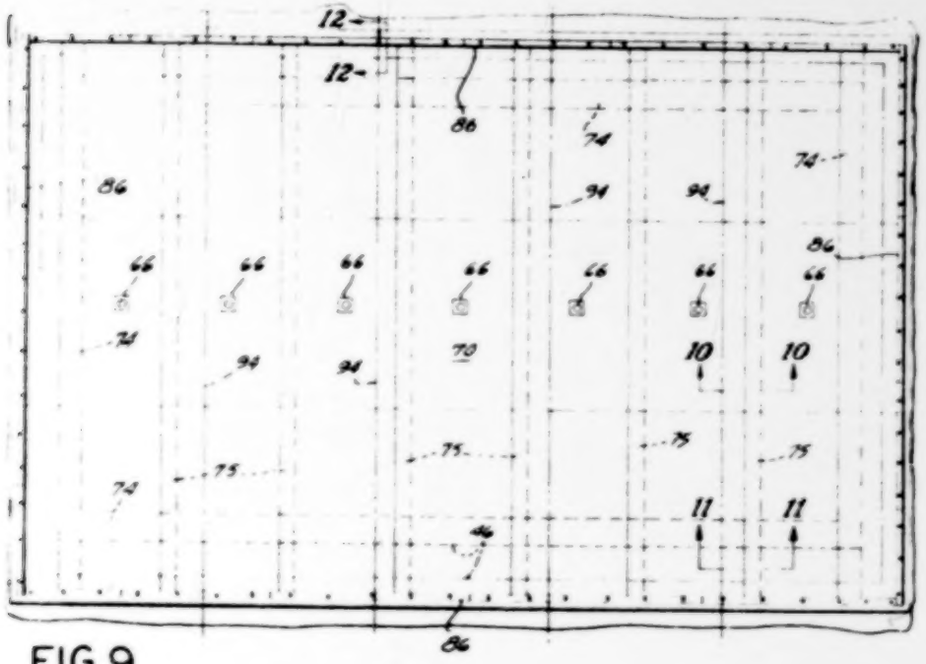


FIG. 9

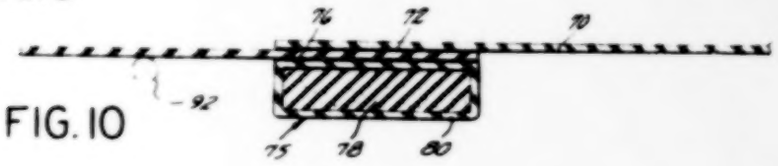


FIG. 10

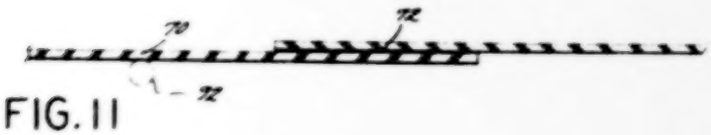


FIG. 11

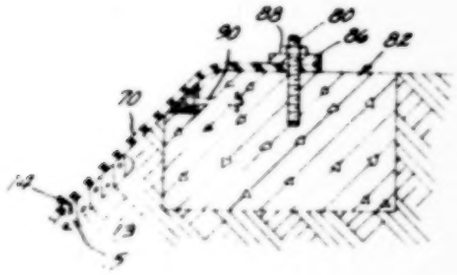


FIG. 12

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FLOATING COVER FOR A LIQUID STORAGE RESERVOIR

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The present invention relates to a floating cover for a liquid storage reservoir, and more particularly to a floating cover adapted to rise and fall with the level of the stored liquid, according to the consumption and replenishment thereof.

It is an object of the present invention to provide a floating cover which will protect the liquid in a storage reservoir from small animals and birds and from deleterious substances such as dirt, radioactive fallout, and the like, and which is strong enough and sufficiently well supported by flotation means to support relatively heavy loads, such as the weight of snow. The invention is particularly adapted for use in conjunction with conventional water reservoirs characterized by sloping side walls, although it can also be used in conjunction with reservoirs and tanks having vertical walls. Such water reservoirs usually contain large volumes of water and it is important that the cover utilized to protect the water be relatively inexpensive and yet be capable of accommodation to the varying water areas as the water level rises and falls in the slope-sided reservoir.

Another object of the invention is to provide such a floating cover which is adapted to define a drainage and expansion section or sump for concentrating rain water so that it may be periodically removed, as by pumping or the like.

Yet another object of the invention is to provide a floating cover for a water reservoir which is supported upon the surface of the water by a plurality of sets of flotation units, and wherein each set of flotation units defines an unsupported area therebetween which tends to collect rain water. A system of drainage pipes or lines is provided with inlet openings in communication with each of these unsupported areas for removing the collected rain water.

It is also an object of the invention to provide a means for anchoring the floating cover relative to the bottom of the reservoir to constrain the cover against lateral movement, which might occur by virtue of strong winds sweeping laterally across the surface of the reservoir.

Another object of the invention is to provide a floating cover which can be installed in a water reservoir for protection of the stored water without the necessity of removing any of the water therefrom, and which includes a flap or flaps which can be opened to afford access to the underside of the cover and to the interior of the reservoir for maintenance purposes and the like.

A further object of the invention is to provide a floating cover which can be installed in a water reservoir for protection of the stored water without the necessity of removing any of the water therefrom, and which is adapted for support by a plurality of cables or the like disposed therebeneath during emptying of the reservoir for maintenance or repair of the reservoir.

Other objects and features of the invention will become apparent from consideration of the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a plan view of a floating cover in accordance with the present invention;

FIG. 2 is an enlarged view taken along the line 2—2 of FIG. 1;

FIG. 3 is an enlarged view taken along the line 3—3 of FIG. 1;

FIG. 4 is an enlarged view taken along the line 4—4 of FIG. 1;

FIG. 5 is an enlarged view of the area designated by the numeral 5 in FIG. 1;

FIG. 6 is an enlarged view taken along the line 6—6 of FIG. 1;

FIG. 7 is an enlarged view taken along the line 7—7 of FIG. 6;

FIG. 8 is an enlarged view taken along the line 8—8 of FIG. 1;

FIG. 9 is a plan view of another form of floating cover in accordance with the present invention;

FIG. 10 is an enlarged view taken along the line 10—10 of FIG. 9;

FIG. 11 is an enlarged view taken along the line 11—11 of FIG. 9; and

FIG. 12 is an enlarged view taken along the line 12—12 of FIG. 9.

Referring now to the drawings, the floating cover of the present invention is designated generally by the numeral 10 and is illustrated in association with an earthen reservoir 12 which in the present instance is rectangular in shape. The particular reservoir 12 is characterized by downwardly and inwardly slanting or sloping side walls 14, as best viewed in FIGS. 2 and 3, which are usually formed by a compacted subgrade 13 of earth covered with a relatively thin layer 15 of asphalt of cement treated material.

By virtue of the fact that the reservoir 12 has sloping side walls, the area at the upper extremity or periphery of the reservoir is greater than the corresponding area at the base or bottom of the reservoir and the cover 10 must be adapted to accommodate itself to the difference in area as the level of the water rises and falls according to the consumption and replenishment thereof.

The cover 10 is continuous sheet of material, such as flexible, relatively thin butyl rubber sheeting or vinyl, polyethylene or like film impervious to and adapted to completely overlie the water in the reservoir 12 in coextensive relationship to the reservoir periphery. The sheeting or film is preferably fabric reinforced for improved tear strength. The size or area selected for the cover 10 is such that it is appreciably greater than the area of the reservoir periphery, that is the periphery of the reservoir at its upper extremity. With this arrangement, wrinkles or folds 16 are formed in the cover 10, and tend to develop adjacent the periphery of the reservoir 12 for reasons which will become apparent hereinafter.

The peripheral or free edges of the cover 10 are anchored in position in substantially air and fluid-tight relationship by a peripherally continuous sheet anchor 18 adjacent the uppermost extremity of the reservoir. Any suitable sheet anchor 18 for maintaining the cover 10 in position in substantially fluid-tight relationship is satisfactory. One exemplary form of sheet anchor 18 is illustrated in FIGS. 1, 3, and 4. In this construction, the anchor 18 comprises a fixed portion 22 which extends about the periphery of the reservoir 12 and is conveniently made of concrete firmly embedded in the subgrade 13. Facing elements 26 are arranged coextensive with the fixed portion 22, and are constituted of elongated lengths of timber arranged in abutting relation at their ends. Each anchor 18 also includes a plurality of movable portions which each comprise an elongated concrete block 30 and a coextensive facing element 32 made of a wooden timber or the like. The plurality of blocks 30 and associated elements 32 are arranged in confronting relationship to the facing elements 26 and the fixed portion 22 of the sheet anchor so that the wooden facing ele-

ments 26 and 32 define jaws initially spaced apart to receive the outer margin of the cover 10. The movable and fixed portions of the sheet anchor are then moved together to clamp the edge of the cover 10 therebetween by operating a plurality of nut and bolt assemblies, one of which is illustrated at 34 in FIG. 4. With the provision of the continuous sheet anchor 18, it will be apparent that the cover 10 may be quickly installed without having to remove any of the water from the reservoir and without having to make any special anchorages or provisions for anchorages in the bottom or sides of the reservoir. In addition, a fluid-tight relationship is provided between the cover 10 and the periphery of the reservoir.

In order to obtain access to the underside of the cover 10 and the interior of the reservoir, four flaps 36 are provided at the four corners of the cover 10, each flap 36 being defined by a right angular cut in the cover 10, suitably strengthened by reinforcing strips and secured in closed position by lacing 38 or the like.

The cover 10 is floated or buoyed upon the surface of the stored water by a plurality of float units 40 so that in the event that the cover 10 is accidentally torn, it is prevented from sinking to the bottom of the reservoir and thereby complicating repair of the cover. The cover 10 could also be floated by employing the float arrangement of FIGS. 9–12, as will subsequently be described, or the cover 10 could itself be made floatable by making it of a material such as foamed plastic having positive buoyancy and characterized by marginal flexible portions of the neutral or negative buoyancy. However, utilization of the float units 40 is preferable where it is desired to drain water from the cover 10 from a number of different points over the surface thereof.

Each float unit 40 is made of butyl rubber and is provided with an inflation valve 43 extending above the surface of the cover 10. That is, each float unit is affixed to the underside of the cover by three straps 42 secured to the underside of the cover by a plurality of suitable fasteners 44, the inflation valve 43 for each float unit extending upwardly through a suitable opening in the cover so that the unit may be easily inflated or deflated.

The float units 40 are preferably arranged in substantially uniformly distributed sets of four, the four units of each set being oriented to define a rectangular bay 41 or unsupported area therebetween. With this arrangement, rain water tends to collect in the unsupported areas defined by the sets of float units, making it possible to pump or otherwise drain this water off the surface of the cover by pumping from each bay 41, as will be seen.

In addition, it is particularly noted that the float units 40 are spaced away from the outer periphery of the cover 10 to define an unsupported peripheral area constituting an expansion and drainage section or sump, which is designated in FIG. 1 by dash-dot lines extending about the periphery of the cover 10 and identified by the numeral 46.

The area of the sump 46 is completely unsupported by float units so that the excess material in the cover tends to develop the folds 16. Then, as rain water collects upon the surface of the cover, the rain water tends to flow to the lower, unsupported areas of the cover, comprising both the bays 41 and the sump 46. The water in the sump 46 forces the folds 16 more deeply into the stored water as the volume of rain water increases. Drainage of the rain water to the sump 46 may be increased by selectively inflating the float units 40 so that the more interiorly disposed float units ride higher on the reservoir water cause the rain water to flow exteriorly or outwardly into the sump 46.

In certain applications water collection in the area of the sump 46 is sufficient without resorting to the inflatable float units 40, and in these instances an arrangement like that illustrated in FIGS. 9–12 can be used, as will be more particularly described hereinafter.

A plurality of flexible drain lines 48 are arranged to extend across the cover 10 as best illustrated in FIG. 1, and are each provided with inlet openings 50 in communication with the unsupported bays 41 defined by each set of the float units 40. One extremity of each of the drain lines 48 is capped or closed, as at 49, and the opposite extremities of the lines are connected to a manifold drain line 52 extending transversely of the lines 48 at one end of the reservoir. In addition, a continuous sump drain line 54, normally located at a level below that of the line 52, extends about the periphery of the cover and is provided along its length with openings (not shown) in communication with the sump 46.

The manifold line 52, as best illustrated in FIG. 2, is connected by a flexible drain line 56 to a drain conduit 58 secured by a bracket 59 to the facing element 32 in the berm 20 of the reservoir. The drain conduit 58 is made of a length sufficient that it will reach the manifold line 52 at the lowest level to which the water in the reservoir falls. The drain conduit 58 is connected to any suitable pump or drainage means (not shown) whereby the rain water collected in the bays 41 can easily be removed.

The sump drain line 54 is connected by a flexible drain line 60 to a drain conduit 61 which is located alongside the drain line 56 and is connected to the facing element 32 by the same bracket 59 which secures the drain conduit 58. Like the flexible line 56, the line 60 is made of a length sufficient that it will reach the sump line 54 at its lowest level within the fold 16 defining the sump 46. The drain conduit 61 is connected to the same pump or drainage means (not shown) to which the drain conduit 58 is connected so that the pump can take a suction on either or both of the conduits, as will be apparent to those skilled in the art.

The cover 10 is constrained against lateral movement, as might occur by virtue of a wind sweeping across the surface of the reservoir, by a plurality of anchors 62 resting upon the bottom of the reservoir. Each anchor 62 is connected to the cover by a flexible line 64 made of a length sufficient to accommodate the rise and fall of the cover 10 during use of the reservoir, the upper end of each line 64 being secured to a fitting 66 which is adhered or otherwise secured to a reinforced section 68 of the cover 10.

Referring now to FIGS. 9 through 12, there is illustrated another cover in accordance with the present invention, designated generally by the numeral 70. The cover 70 is in many respects similar to the cover 10 previously described, but is characterized by a different arrangement of floats, a different form of sheet anchorage, and an added provision for support of the cover during repair and maintenance of the reservoir.

More particularly, the cover 70 is rectangular in configuration and made of thin butyl rubber sheeting or the like which completely overlies the water in the reservoir. The size of the cover 70 is greater than the area of the reservoir at its upper periphery so that the folds 16 are formed at the outer margin of the cover 70, as was the case with the cover 10. The cover 70 is fabricated by securing together a plurality of elongated strips of the cover material, the seams between such strips being best illustrated in FIG. 11. The adjacent margins of the cover strips are arranged to form a lap joint and any suitable adhesive 72 is interposed between the lap portions of the strips to secure them together.

A plurality of elongated floats 74 and 75 are secured to the underside of the cover 70, as best illustrated in FIGS. 9 and 10, by a suitable adhesive 76. The floats 74 extend perimetrically along the sides and ends of the cover 70 in a rectangular configuration and, in one embodiment, are approximately 12 inches wide. Each float 74 is elongated and abuts the adjacent floats at its ends. Each float 74 and 75 includes a central portion 78 made of buoyant material such as one of the well known plas-

tic or rubber foam materials, and also includes an outer casing 80 made of butyl rubber and completely enveloping the portion 78.

The peripheral band of floats 74 are spaced from the edge margin of the cover 70 and define the unsupported sump portion 46 between the marginal floats and the edge of the cover 70. In addition, the plurality of floats 75, preferably of lesser width than the marginal floats 74, extend across the cover beneath each of the seams between the cover strips. Thus, the pattern of floats 74 is a rectangular perimeter of floats, the floats 75 constitute a plurality of strings of floats across the cover in parallel, spaced relationship to one another.

Rain water collects in the sump 46, as previously described in connection with the first embodiment, by forcing the folds 16 deeper into the water stored in the reservoir.

Referring now to FIG. 12, the edge margins of the cover 70 are secured in position adjacent the berm of the reservoir in substantially fluid-tight relationship by a peripherally continuous concrete footing 82 firmly embedded in the subgrade 13. The footing 82 includes a plurality of equally spaced studs 84 embedded therein, and a plurality of elongated anchor elements 86 are arranged in end-abutting relationship along the length of the footing 82 and are each provided with suitable openings for receiving the upper ends of the studs 80. The margin of the cover 70 is also provided with similar openings for the studs 80 so that the cover may be secured in position by first disposing the margin thereof in position upon the studs 80 and thereafter placing the anchor elements 86 in position so that the cover 70 is sandwiched between jams constituted by the elements 86 and the upper surface of the footing 82. A plurality of nuts 88 are then threaded upon the plurality of studs 80 to firmly secure the cover 70 in position.

With the arrangement just described, no provision need be made for pumping rain water from the central portions of the cover. Rather, the arrangement of floats 74 has been found to float the cover high enough in the reservoir water that rain water can drain into the sump 46 for removal by any suitable pump (not shown). Thus, the sump 46 can be drained merely by disposing a flexible drain line in any portion of the sump and taking a suction until the collected water is removed, as will be apparent.

The footing 82 also includes a plurality of peripherally spaced and embedded I-bolts 90, each I-bolt on one side of the reservoir having its counterpart located in the confronting footing 82 on the opposite side of the reservoir. With this arrangement supporting cables 92, indicated in dash-dot outline in FIGS. 10 and 11 can be disposed beneath the cover 70 and connected at their opposite extremities of the I-bolts 90. The cables 92 thus extend beneath the cover in parallel relationship, as indicated by the parallel dash-dot lines 94 in FIG. 9, so that when it is desired to repair the bottom or side walls of the reservoir, the stored water can be emptied and the cover 70 supported or suspended above the reservoir floor. The cables 92 may be installed beneath the cover and attached to the I-bolts 90 when the cover is first installed, if sufficient slack is provided in the cables to permit the cover to rise and fall with the change in level of the stored water, or the cables may be installed only when it is desired to empty the reservoir. In this case, skin divers can easily install the cables in their proper positions. Although not shown, the underside of the cover 70 in the area of the cables is preferably suitably reinforced by adhesively securing an extra thickness of butyl sheeting, thereby reducing possible abrading of the underside of the cover by the cables 92.

From the foregoing it will be apparent that a floating cover has been provided which is adapted to not only accommodate itself to the rise and fall of the water level in a reservoir, but which is also adapted to define a sump area adjacent the periphery of the reservoir for the collection of rain water whereby the rain water may be easily pumped away or otherwise removed. In addition, the cover completely overlies the water in the reservoir and prevents contamination of the water by deleterious substances or by small animals and birds.

Various modifications and changes may be made with regard to the foregoing detailed description without departing from the spirit of the invention or the scope of the following claims.

We claim:

1. A floating cover for a liquid storage reservoir wherein the level of the stored liquid varies, said cover comprising:

a continuous sheet of flexible material impervious to and adapted to completely overlie the liquid in the storage reservoir in coextensive relationship to the reservoir periphery for attachment thereto, the area and flexibility of said sheet permitting formation of depending folds in said sheet;

a plurality of anchors adapted to rest upon the bottom of said reservoir;

a plurality of flexible lines connecting said anchors to various portions of said sheet to constrain said sheet against lateral movement over the surface of the stored liquid;

and flotation means on said sheet interiorly of the outer periphery thereof for supporting said sheet upon the surface of the stored liquid whereby said depending folds tend to define a sump section adjacent the outer periphery of said sheet, rain water tending to collect in said depending folds and force said folds deeper into the stored liquid as the volume of rain water increases.

2. In combination with a liquid storage reservoir wherein the level of the stored liquid varies, a floating cover comprising:

a continuous sheet of flexible material impervious to and adapted to completely overlie said liquid in coextensive relationship to the reservoir periphery, the area of said sheet being greater than the area of said reservoir at the upper extremity thereof whereby depending folds are formed in said sheet;

fastening means for securing the outer periphery of said sheet adjacent the reservoir periphery;

a plurality of sets of individually inflatable float units attached to said sheet in spaced relationship across said sheet interiorly of the outer periphery thereof for supporting said sheet upon the surface of the stored liquid whereby said depending folds form adjacent the outer periphery of said sheet and define a sump section, rain water tending to collect in said depending folds each said set of float units defining an unsupported area of said sheet therebetween;

and drain lines extending across said sheet and having inlet openings in communication with said sump section and with each said unsupported area, and further having a discharge portion adapted for connection to a pump, said float units being adapted for individual inflation whereby rain water tends to flow away from the more highly inflated ones of said float units and into said unsupported areas adjacent the less inflated ones of said float unit.

3. In combination:

a liquid storage reservoir having sloping side walls and a peripheral berm;

anchor means located about the periphery of said reservoir adjacent said berm and including fixed and movable portions constituting jaws, and further including means for urging said jaws closed;

a continuous sheet of flexible material impervious to and adapted to completely overlie the liquid in the storage reservoir in coextensive relationship to the reservoir berm, the area and flexibility of said sheet permitting formation of depending folds in said

sheet, the peripheral edges of said sheet being disposed between said jaws and firmly held thereby in the closed position thereof;

a plurality of anchors adapted to rest upon the bottom of said reservoir;

a plurality of flexible lines connecting said anchors to various portions of said sheet to constrain said sheet against lateral movement over the surface of the stored liquid;

and flotation means on said sheet interiorly of the outer periphery thereof for supporting said sheet upon the surface of the stored liquid whereby said depending folds tend to define a sump section adjacent the outer periphery of said sheet, rain water tending to collect in said depending folds and force said folds deeper into the stored liquid as the volume of rain water increases.

4. In combination:

a liquid storage reservoir having sloping side walls and a peripheral berm;

anchor means located about the periphery of said reservoir adjacent said berm and including fixed and movable portions constituting jaws, and further including means for urging said jaws closed, said anchor means mounting a plurality of cable mounts;

a continuous sheet of flexible material impervious to and adapted to completely overlie the liquid in the storage reservoir in coextensive relationship to the reservoir berm, the area and flexibility of said sheet permitting formation of depending folds in said sheet, the peripheral edges of said sheet being disposed between said jaws and firmly held thereby in the closed position thereof;

flotation means on said sheet interiorly of the outer periphery thereof for supporting said sheet upon the surface of the stored liquid whereby said depending folds tend to define a sump section adjacent the outer periphery of said sheet, rain water tending to collect in said depending folds and force said folds deeper into the stored liquid as the volume of rain water increases;

and a plurality of cables extending between said cable mounts and beneath said sheet in positions to support said sheet in the absence of liquid in said reservoir.

5. Apparatus for preventing contamination of the stored liquid in an open reservoir, comprising:

a continuous sheet of flexible, relatively thin material impervious to and completely overlying said liquid in coextensive relationship to the periphery of said reservoir, the size of said sheet being greater than the area encompassed by the upper periphery of said reservoir;

anchor means securing the outer periphery of said sheet to the upper periphery of said reservoir in fluid-tight relationship therewith;

and float means on said sheet spaced inwardly from the upper periphery of said reservoir to raise and lower said sheet on the surface of said liquid as the level thereof varies, with said float means supporting the area of said sheet engaged by said float means at a higher elevation than the portion of said sheet spaced outwardly of said float means and inwardly of said anchor means whereby said portion forms a depending rainwater collection sump.

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CERTIFICATE OF SERVICE

I, FRANCIS A. UTECHT, a member of the Bar of this Court, hereby certify that on October 6, 1977, three copies of the attached PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT were mailed, postage prepaid, to attorneys for Respondents, addressed as follows:

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